Claims

1. A nozzle assembly (22) for applying a liquid to a substrate, wherein the nozzle assembly (22) comprises a nozzle body (26) incorporating a plurality of nozzles (36) located substantially in a line and a substantially vertically extending guide plate (28) having a flat surface and a straight lower edge (64) and wherein the nozzles (36) are directed towards the flat surface of the guide plate (28) above the lower edge (64) so that a liquid film (84) forms on the guide plate (28) and flows off over the lower edge (64).

2. A nozzle assembly (22) in accordance with Claim 1, characterized in that a downwardly widening gap (80) is formed between the nozzle body (26) and the guide plate (28).

3. A nozzle assembly (22) in accordance with Claim 2, characterized in that the widening gap (80) is formed by a flat surface (76) of the nozzle body (26) and the flat surface of the guide plate (28) which are arranged at an acute angle (α) relative to one another.

4. A nozzle assembly (22) in accordance with Claim 3, characterized in that the angle (α) is adjustable.

5. A nozzle assembly (22) in accordance with Claim 3 or 4, characterized in that the angle (α) lies between 0.5 and 4°, preferably between 1° and 3°.

6. A nozzle assembly (22) in accordance with Claim 5, characterized in that the angle (α) lies between 1.5° and 2.5°.

7. A nozzle assembly (22) in accordance with any of the Claims 3 to 6, characterized in that the flat surface of the guide plate (28) extends downwardly over the entire flat surface (76) of the nozzle body (26).

8. A nozzle assembly (22) in accordance with any of the preceding Claims, characterized in that the guide plate (26) is attached directly to the nozzle body (26).

9. A nozzle assembly (22) in accordance with Claim 8, characterized in that the guide plate (26) is attached to the nozzle body (26) above the nozzles (36).

10. A nozzle assembly (22) in accordance with any of the preceding Claims, characterized by a seal (74) which is located above the nozzles (36) between the nozzle body (26) and the guide plate (28).

11. A nozzle assembly (22) in accordance with Claim 10, characterized by a recess in the nozzle body (26) for accommodating the seal (74).

12. A nozzle assembly (22) in accordance with either of the Claims 10 or 11, characterized in that the seal (74) has a round cross section.

13. A nozzle assembly (22) in accordance with any of the preceding Claims, characterized in that the nozzles (36) are formed by straight passages in the nozzle body (26), whereby, in terms of height, an inlet end (50) of the passage lies below an outlet end (51).

14. A nozzle assembly (22) in accordance with Claim 13, characterized in that the inlet ends (50) of the nozzles (36) flow into a common distributor line (38) which has a substantially larger cross section than the respective nozzles (36).

15. A nozzle assembly (22) in accordance with Claim 14, characterized in that the inlet ends (50) of the nozzles (36) lie at or in the proximity of a highest point of the distributor line (38).

16. A nozzle assembly (22) in accordance with either of the Claims 14 or 15, characterized by a supply line (44) which is located below the distributor line (38) and is connected by a plurality of feeder lines (54) to the distributor line (38).

17. A nozzle assembly (22) in accordance with Claim 16, characterized in that the feeder lines (54) are evenly spaced over the entire length of the distributor line (38).

18. A nozzle assembly (22) in accordance with any of the preceding Claims, characterized in that at least one surface of the guide plate (28) directed toward the nozzles (36) consists of a hydrophilic layer (62).

19. A nozzle assembly (22) in accordance with any of the preceding Claims, characterized by a mechanism for producing a relative movement between the substrate (2) and the nozzle assembly (22).

20. A nozzle assembly (22) in accordance with Claim 19, characterized in that the mechanism comprises a unit for moving the nozzle assembly (22) substantially parallel to the surface of the substrate (2).

21. A nozzle assembly (22) in accordance with Claim 19 or 20, characterized by a linear-movement unit for moving the substrate (2) and/or the nozzle assembly (22).

22. A nozzle assembly (22) in accordance with Claim 20, characterized in that the nozzle body (26) and the guide plate (28) are attached to a pivotal arm (32).

23. A nozzle assembly (22) in accordance with any of the preceding Claims, characterized in that the guide plate is wider (28) than the substrate (2).

24. A nozzle assembly (22) in accordance with any of the preceding Claims, characterized in that the outermost nozzles (36) along the line are spaced by a distance which is greater than the width of the substrate (2).

25. A nozzle assembly (22) in accordance with any of the preceding Claims, characterized by a mechanism (19) for adjusting the spacing between the lower edge (64) of the guide plate (28) and the substrate (2).

26. A nozzle assembly (22) in accordance with any of the preceding Claims, characterized in that the lower edge (64) of the guide plate (28) is a sharp edge.

27. A nozzle assembly (22) in accordance with any of the preceding Claims, characterized by a mechanism for opening and closing pre-determined nozzles, and in particular, the outermost nozzles.

28. A nozzle assembly (22) in accordance with any of the preceding Claims, characterized in that an angle within the range of 90° to 94°, and preferably between 90.5° and 93° is formed between the nozzles (36) and the guide plate (28).

29. A nozzle assembly (22) in accordance with any of the preceding Claims, characterized in that the angle lies between 90.5° and 92°.